

WHAT IS CLAIMED IS:

1. A process for the continuous preparation of perfluorinated organic compounds comprising electrochemically fluorinating non-fluorinated or partially fluorinated organic compounds with an electrolyte comprising hydrogen fluoride that has a quantity of charge that ranges from about 5 Ah per kg of electrolyte to about 600 Ah per kg of electrolyte.

5 2. The process according to Claim 1, wherein the quantity of charge is kept in the range from about 50 to about 200 Ah per kg of electrolyte.

10 3. The process according to Claim 1, wherein the hydrogen fluoride has a water content of less than about 300 ppm, a sulfuric acid content of less than about 300 ppm, a sulfur dioxide content of less than about 30 ppm and an arsenic content of less than about 30 ppm.

15 4. The process according to Claim 1, wherein the non-fluorinated or partially fluorinated organic compounds are sulfolane, sulfolene, butylsulfonyl fluoride, butylsulfonyl chloride or mixtures thereof.

5. The process according to Claim 1, wherein electrolyte salts are added to the hydrogen fluoride.

20 6. The process according to Claim 1, wherein the electrolyte at the commencement of the fluorination comprises from about 98% by weight of hydrogen fluoride and 2% by weight of non-fluorinated or partially fluorinated organic compound.

25 7. The process according to Claim 1, wherein the addition of non-fluorinated or partially fluorinated compounds is carried out continuously or discontinuously.

8. The process according to Claim 1, wherein the current density at which the electrolysis is carried out is from about 5 to about 40 mA/cm² and the voltage is from about 5 to about 10 volts.

30 9. The process according to Claim 1, wherein the reaction is carried out at a temperature of from 0 to about 20°C and a pressure of from about 0.8 to about 2 bar.

10. The process according to Claim 1, wherein the hydrogen fluoride used has an arsenic content of less than about 10 ppm.